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L18 ANSWER 1 OF 11 HCAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 2003:874778 HCAPLUS
DOCUMENT NUMBER: 139:347730
TITLE: Auto-stimulating cells and methods for making and using the same
INVENTOR(S): **Tykocinski, Mark L.; Zheng, Guoxing**
PATENT ASSIGNEE(S): USA
SOURCE: U.S. Pat. Appl. Publ., 38 pp., Cont.-in-part of U.S. Ser. No. 957,056.
CODEN: USXXCO
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 2
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 2003206917	A1	20031106	US 2002-205524	20020725
US 6316256	B1	20011113	US 2000-476828	20000103
US 2002037583	A1	20020328	US 2001-957056	20010920
WO 2004011673	A1	20040205	WO 2003-US23039	20030723
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, UZ, VC, VN, YU, ZA, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM				
RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG				
US 2004161806	A1	20040819	US 2004-775942	20040210

PRIORITY APPLN. INFO.:

US 2000-476828	A3	20000103
US 2001-957056	A2	20010920
US 2002-398050P	P	20020722
US 2002-205524	A	20020725

AB Methods for transferring one or more proteins to a cell are disclosed. The protein or proteins to be transferred are in the form of a fusion protein, and contain at least one domain encoding for a protein or peptide having trans signaling and/or adhesion function. The fusion protein is transferred to a cell by binding to a lipidated protein, which has been incorporated into the cell membrane. In an addnl. aspect of the invention, methods of making fusion proteins having cis signaling capabilities, as well as the ability to bind with receptors on the cell's own surface, are provided. Fusion proteins incorporating GPI or a homing element, and a costimulator or inhibitor domain can also be directly transferred to the cell surface. Methods for using cells which have undergone **protein transfer** according to the present methods are also disclosed. This includes use in a cancer vaccine, use for treatment of cancer or autoimmune disease, and use in determining costimulator threshold levels. Recombinant fusion protein containing B7-1 extracellular domain linked to Fcγ1 was transferred to cells precoated with palmitated protein A.

IC ICM A61K039-00
ICS C12N005-08
NCL 424185100; 435372000
CC 9-2 (Biochemical Methods)

Section cross-reference(s): 1, 15
ST auto stimulating cell fusion **protein transfer**;
chimeric B7 1 IgG1 Fc fragment **protein transfer**;
palmitated protein A transfer costimulating chimeric Ig fragment
IT Proteins
RL: BSU (Biological study, unclassified); BIOL (Biological study)
(4-1BB ligand, costimulator domain of, in fusion protein;
auto-stimulating cells, their preparation by transferring fusion proteins having trans signaling or adhesion function, and their use in therapy and assays)
IT Proteins
RL: BSU (Biological study, unclassified); SPN (Synthetic preparation); BIOL (Biological study); PREP (Preparation)
(A, palmitated; auto-stimulating cells, their preparation by transferring fusion proteins having trans signaling or adhesion function, and their use in therapy and assays)
IT Cell activation
(B cell, by fusion protein; auto-stimulating cells, their preparation by transferring fusion proteins having trans signaling or adhesion function, and their use in therapy and assays)
IT Antigens
RL: BSU (Biological study, unclassified); BIOL (Biological study)
(B7 h, costimulator domain of, in fusion protein; auto-stimulating cells, their preparation by transferring fusion proteins having trans signaling or adhesion function, and their use in therapy and assays)
IT Interleukin 2
RL: BSU (Biological study, unclassified); BIOL (Biological study)
(B7-1-Fcγ1 fusion protein effect on T cell production of;
auto-stimulating cells, their preparation by transferring fusion proteins having trans signaling or adhesion function, and their use in therapy and assays)
IT CD antigens
RL: BSU (Biological study, unclassified); BIOL (Biological study)
(CD24, costimulator domain of, in fusion protein; auto-stimulating cells, their preparation by transferring fusion proteins having trans signaling or adhesion function, and their use in therapy and assays)
IT Cytokines
RL: BSU (Biological study, unclassified); BIOL (Biological study)
(CD30 ligand, costimulator domain of, in fusion protein;
auto-stimulating cells, their preparation by transferring fusion proteins having trans signaling or adhesion function, and their use in therapy and assays)
IT Glycoproteins
RL: BSU (Biological study, unclassified); BIOL (Biological study)
(CD40-L (antigen CD40 ligand), costimulator domain of, in fusion protein; auto-stimulating cells, their preparation by transferring fusion proteins having trans signaling or adhesion function, and their use in therapy and assays)
IT CD antigens
RL: BSU (Biological study, unclassified); BIOL (Biological study)
(CD48, costimulator domain of, in fusion protein; auto-stimulating cells, their preparation by transferring fusion proteins having trans signaling or adhesion function, and their use in therapy and assays)
IT CD antigens
RL: BSU (Biological study, unclassified); BIOL (Biological study)
(CD70, costimulator domain of, in fusion protein; auto-stimulating cells, their preparation by transferring fusion proteins having trans signaling or adhesion function, and their use in therapy and assays)
IT Animal cell line
(Daudi; auto-stimulating cells, their preparation by transferring fusion

proteins having trans signaling or adhesion function, and their use in therapy and assays)

IT Animal cell line
(EL4; auto-stimulating cells, their preparation by transferring fusion proteins having trans signaling or adhesion function, and their use in therapy and assays)

IT Hemopoietins
RL: BSU (Biological study, unclassified); BIOL (Biological study)
(FLT3 ligand, in fusion protein; auto-stimulating cells, their preparation by transferring fusion proteins having trans signaling or adhesion function, and their use in therapy and assays)

IT Cell adhesion molecules
RL: BSU (Biological study, unclassified); BIOL (Biological study)
(ICAM-1 (intercellular adhesion mol. 1), costimulator domain of, in fusion protein; auto-stimulating cells, their preparation by transferring fusion proteins having trans signaling or adhesion function, and their use in therapy and assays)

IT Cell adhesion molecules
RL: BSU (Biological study, unclassified); BIOL (Biological study)
(ICAM-2 (intercellular adhesion mol. 2), costimulator domain of, in fusion protein; auto-stimulating cells, their preparation by transferring fusion proteins having trans signaling or adhesion function, and their use in therapy and assays)

IT Cell adhesion molecules
RL: BSU (Biological study, unclassified); BIOL (Biological study)
(ICAM-3 (intercellular adhesion mol. 3), costimulator domain of, in fusion protein; auto-stimulating cells, their preparation by transferring fusion proteins having trans signaling or adhesion function, and their use in therapy and assays)

IT Antibodies and Immunoglobulins
RL: BPN (Biosynthetic preparation); BSU (Biological study, unclassified); BIOL (Biological study); PREP (Preparation)
(IgG1, fusion products, with B7-1; auto-stimulating cells, their preparation by transferring fusion proteins having trans signaling or adhesion function, and their use in therapy and assays)

IT Animal cell line
(JY; auto-stimulating cells, their preparation by transferring fusion proteins having trans signaling or adhesion function, and their use in therapy and assays)

IT Animal cell line
(K562; auto-stimulating cells, their preparation by transferring fusion proteins having trans signaling or adhesion function, and their use in therapy and assays)

IT Antigens
RL: BSU (Biological study, unclassified); BIOL (Biological study)
(LIGHT, costimulator domain of, in fusion protein; auto-stimulating cells, their preparation by transferring fusion proteins having trans signaling or adhesion function, and their use in therapy and assays)

IT Histocompatibility antigens
RL: BSU (Biological study, unclassified); BIOL (Biological study)
(MHC (major histocompatibility complex), with peptide antigen, in fusion protein; auto-stimulating cells, their preparation by transferring fusion proteins having trans signaling or adhesion function, and their use in therapy and assays)

IT Antigens
RL: BSU (Biological study, unclassified); BIOL (Biological study)
(OX-40, ligand, costimulator domain of, in fusion protein; auto-stimulating cells, their preparation by transferring fusion proteins having trans signaling or adhesion function, and their use in therapy and assays)

IT Cell migration
(T cell infiltration, tumor-infiltrating, **protein transfer** to; auto-stimulating cells, their preparation by transferring fusion proteins having trans signaling or adhesion function, and their use in therapy and assays)
IT Cytokines
RL: BSU (Biological study, unclassified); BIOL (Biological study)
(TNFSF7 (tumor necrosis factor superfamily member 7), costimulator domain of, in fusion protein; auto-stimulating cells, their preparation by transferring fusion proteins having trans signaling or adhesion function, and their use in therapy and assays)
IT Proteins
RL: BSU (Biological study, unclassified); BIOL (Biological study)
(TRAIL (tumor necrosis factor-related apoptosis-inducing ligand), as inhibitor domain in fusion protein; auto-stimulating cells, their preparation by transferring fusion proteins having trans signaling or adhesion function, and their use in therapy and assays)
IT B cell (lymphocyte)
Mast cell
Neutrophil
(activation, by fusion protein; auto-stimulating cells, their preparation by transferring fusion proteins having trans signaling or adhesion function, and their use in therapy and assays)
IT Cytokines
RL: BSU (Biological study, unclassified); BIOL (Biological study)
(as homing element in fusion protein; auto-stimulating cells, their preparation by transferring fusion proteins having trans signaling or adhesion function, and their use in therapy and assays)
IT Fas ligand
RL: BSU (Biological study, unclassified); BIOL (Biological study)
(as inhibitor domain in fusion protein; auto-stimulating cells, their preparation by transferring fusion proteins having trans signaling or adhesion function, and their use in therapy and assays)
IT Animal tissue culture
Cell
Drug delivery systems
Human
Therapy
Transplant and Transplantation
(auto-stimulating cells, their preparation by transferring fusion proteins having trans signaling or adhesion function, and their use in therapy and assays)
IT CD4 (antigen)
CD8 (antigen)
Fusion proteins (chimeric proteins)
Proteins
RL: BSU (Biological study, unclassified); BIOL (Biological study)
(auto-stimulating cells, their preparation by transferring fusion proteins having trans signaling or adhesion function, and their use in therapy and assays)
IT Analysis
(biochem., in determining costimulator threshold levels; auto-stimulating cells, their preparation by transferring fusion proteins having trans signaling or adhesion function, and their use in therapy and assays)
IT Ligands
RL: BSU (Biological study, unclassified); BIOL (Biological study)
(cDNA encoding membrane receptor binding to cell surface; auto-stimulating cells, their preparation by transferring fusion proteins having trans signaling or adhesion function, and their use in therapy and assays)

IT Autoimmune disease
Neoplasm
(cells for use in treatment of; auto-stimulating cells, their preparation by transferring fusion proteins having trans signaling or adhesion function, and their use in therapy and assays)

IT Immunostimulation
(cellular; auto-stimulating cells, their preparation by transferring fusion proteins having trans signaling or adhesion function, and their use in therapy and assays)

IT CD80 (antigen)
CD86 (antigen)
LFA-3 (antigen)
RL: BSU (Biological study, unclassified); BIOL (Biological study)
(costimulator domain of, in fusion protein; auto-stimulating cells, their preparation by transferring fusion proteins having trans signaling or adhesion function, and their use in therapy and assays)

IT Immunity
(disorder, alloimmune disease; auto-stimulating cells, their preparation by transferring fusion proteins having trans signaling or adhesion function, and their use in therapy and assays)

IT Blood vessel
(endothelium, **protein transfer** to cell of; auto-stimulating cells, their preparation by transferring fusion proteins having trans signaling or adhesion function, and their use in therapy and assays)

IT Gene, animal
cDNA
RL: BPN (Biosynthetic preparation); BSU (Biological study, unclassified); BIOL (Biological study); PREP (Preparation)
(for membrane protein binding receptor on cell surface; auto-stimulating cells, their preparation by transferring fusion proteins having trans signaling or adhesion function, and their use in therapy and assays)

IT Antibodies and Immunoglobulins
RL: BSU (Biological study, unclassified); BIOL (Biological study)
(fragments, Fc, chimeric, in fusion protein; auto-stimulating cells, their preparation by transferring fusion proteins having trans signaling or adhesion function, and their use in therapy and assays)

IT Antigen-presenting cell
(fusion protein activating; auto-stimulating cells, their preparation by transferring fusion proteins having trans signaling or adhesion function, and their use in therapy and assays)

IT Apoptosis
(fusion protein having domain inducing, in T cell; auto-stimulating cells, their preparation by transferring fusion proteins having trans signaling or adhesion function, and their use in therapy and assays)

IT Adhesion, biological
(fusion protein with motif for; auto-stimulating cells, their preparation by transferring fusion proteins having trans signaling or adhesion function, and their use in therapy and assays)

IT Receptors
RL: BSU (Biological study, unclassified); BIOL (Biological study)
(fusion proteins binding to cell surface; auto-stimulating cells, their preparation by transferring fusion proteins having trans signaling or adhesion function, and their use in therapy and assays)

IT Antigens
RL: BSU (Biological study, unclassified); BIOL (Biological study)
(heat-stable, costimulator domain of, in fusion protein; auto-stimulating cells, their preparation by transferring fusion proteins having trans signaling or adhesion function, and their use in therapy

and assays)
IT Glycophospholipids
RL: BSU (Biological study, unclassified); BIOL (Biological study)
(in fusion protein; auto-stimulating cells, their preparation by transferring fusion proteins having trans signaling or adhesion function, and their use in therapy and assays)
IT Homing receptors
RL: BSU (Biological study, unclassified); BIOL (Biological study)
(in fusion proteins; auto-stimulating cells, their preparation by transferring fusion proteins having trans signaling or adhesion function, and their use in therapy and assays)
IT T cell (lymphocyte)
(infiltration, tumor-infiltrating, **protein transfer** to; auto-stimulating cells, their preparation by transferring fusion proteins having trans signaling or adhesion function, and their use in therapy and assays)
IT Protein motifs
(inhibitor domain, in fusion protein; auto-stimulating cells, their preparation by transferring fusion proteins having trans signaling or adhesion function, and their use in therapy and assays)
IT Skin
(keratinocyte, **protein transfer** to; auto-stimulating cells, their preparation by transferring fusion proteins having trans signaling or adhesion function, and their use in therapy and assays)
IT Lymphocyte
(killer cell, activation, by fusion protein; auto-stimulating cells, their preparation by transferring fusion proteins having trans signaling or adhesion function, and their use in therapy and assays)
IT T cell (lymphocyte)
(killer cell, **protein transfer** to lymphokine-activated; auto-stimulating cells, their preparation by transferring fusion proteins having trans signaling or adhesion function, and their use in therapy and assays)
IT Cell activation
(killer lymphocyte, by fusion protein; auto-stimulating cells, their preparation by transferring fusion proteins having trans signaling or adhesion function, and their use in therapy and assays)
IT Cell membrane
(lipidated protein in, for fusion **protein transferral** to cell; auto-stimulating cells, their preparation by transferring fusion proteins having trans signaling or adhesion function, and their use in therapy and assays)
IT Proteins
RL: BSU (Biological study, unclassified); BIOL (Biological study)
(lipidated, fusion **protein transferral** to cell by binding to; auto-stimulating cells, their preparation by transferring fusion proteins having trans signaling or adhesion function, and their use in therapy and assays)
IT Cell activation
(mast cell, by fusion protein; auto-stimulating cells, their preparation by transferring fusion proteins having trans signaling or adhesion function, and their use in therapy and assays)
IT Proteins
RL: BPN (Biosynthetic preparation); BSU (Biological study, unclassified); BIOL (Biological study); PREP (Preparation)
(membrane, binding receptor on cell surface, cDNA encoding; auto-stimulating cells, their preparation by transferring fusion proteins having trans signaling or adhesion function, and their use in therapy and assays)

IT T cell (lymphocyte)
(natural killer, **protein transfer** to;
auto-stimulating cells, their preparation by transferring fusion proteins having trans signaling or adhesion function, and their use in therapy and assays)
IT Cell activation
(neutrophil, by fusion protein; auto-stimulating cells, their preparation by transferring fusion proteins having trans signaling or adhesion function, and their use in therapy and assays)
IT Cell proliferation
(of T cells painted with chimeric conjugate; auto-stimulating cells, their preparation by transferring fusion proteins having trans signaling or adhesion function, and their use in therapy and assays)
IT Glycophospholipids
RL: BSU (Biological study, unclassified); BIOL (Biological study)
(phosphatidylinositol-containing, in fusion proteins; auto-stimulating cells, their preparation by transferring fusion proteins having trans signaling or adhesion function, and their use in therapy and assays)
IT Virus
(**protein transfer** to T cell having specificity for peptide antigen of; auto-stimulating cells, their preparation by transferring fusion proteins having trans signaling or adhesion function, and their use in therapy and assays)
IT Peptides, biological studies
RL: BSU (Biological study, unclassified); BIOL (Biological study)
(**protein transfer** to T cell having specificity for viral antigenic; auto-stimulating cells, their preparation by transferring fusion proteins having trans signaling or adhesion function, and their use in therapy and assays)
IT Muscle
Nerve
Pancreatic islet of Langerhans
(**protein transfer** to cell of; auto-stimulating cells, their preparation by transferring fusion proteins having trans signaling or adhesion function, and their use in therapy and assays)
IT Lymphokines
RL: BSU (Biological study, unclassified); BIOL (Biological study)
(**protein transfer** to killer cell activated by; auto-stimulating cells, their preparation by transferring fusion proteins having trans signaling or adhesion function, and their use in therapy and assays)
IT Embryo, animal
Mesenchyme
(**protein transfer** to stem cell of; auto-stimulating cells, their preparation by transferring fusion proteins having trans signaling or adhesion function, and their use in therapy and assays)
IT B cell (lymphocyte)
Basophil
CD4-positive T cell
CD8-positive T cell
Chondrocyte
Dendritic cell
Eosinophil
Fibroblast
Hematopoietic precursor cell
Mast cell
Monocyte
Neutrophil
Osteoblast
Stem cell

T cell (lymphocyte)
(**protein transfer** to; auto-stimulating cells, their preparation by transferring fusion proteins having trans signaling or adhesion function, and their use in therapy and assays)

IT Cell activation
(second domain of fusion protein having costimulator domain for; auto-stimulating cells, their preparation by transferring fusion proteins having trans signaling or adhesion function, and their use in therapy and assays)

IT Antibodies and Immunoglobulins
RL: BSU (Biological study, unclassified); BIOL (Biological study)
(single chain, scFv, as homing element in fusion protein; auto-stimulating cells, their preparation by transferring fusion proteins having trans signaling or adhesion function, and their use in therapy and assays)

IT Signal transduction, biological
(trans or cis signaling, fusion protein with motif for; auto-stimulating cells, their preparation by transferring fusion proteins having trans signaling or adhesion function, and their use in therapy and assays)

IT Protein motifs
(trans signaling or adhesion; auto-stimulating cells, their preparation by transferring fusion proteins having trans signaling or adhesion function, and their use in therapy and assays)

IT Antigens
RL: BSU (Biological study, unclassified); BIOL (Biological study)
(tumor-associated, **protein transfer** to T cell having specificity for; auto-stimulating cells, their preparation by transferring fusion proteins having trans signaling or adhesion function, and their use in therapy and assays)

IT Vaccines
(tumor; auto-stimulating cells, their preparation by transferring fusion proteins having trans signaling or adhesion function, and their use in therapy and assays)

IT Antitumor agents
(vaccines; auto-stimulating cells, their preparation by transferring fusion proteins having trans signaling or adhesion function, and their use in therapy and assays)

IT Infection
(viral, treatment of; auto-stimulating cells, their preparation by transferring fusion proteins having trans signaling or adhesion function, and their use in therapy and assays)

IT Interferons
RL: BSU (Biological study, unclassified); BIOL (Biological study)
(γ, B7-1-Fcγ1 fusion protein effect on T cell production of; auto-stimulating cells, their preparation by transferring fusion proteins having trans signaling or adhesion function, and their use in therapy and assays)

IT 57-10-3D, Palmitic acid, reaction products with protein A 264888-18-8
RL: BSU (Biological study, unclassified); BIOL (Biological study)
(auto-stimulating cells, their preparation by transferring fusion proteins having trans signaling or adhesion function, and their use in therapy and assays)

IT 62031-54-3, FGF 83869-56-1, GM-CSF 127464-60-2, Vascular endothelial growth factor 207621-35-0, TRANCE
RL: BSU (Biological study, unclassified); BIOL (Biological study)
(in fusion protein; auto-stimulating cells, their preparation by transferring fusion proteins having trans signaling or adhesion function, and their use in therapy and assays)

IT 14464-31-4

RL: RCT (Reactant); RACT (Reactant or reagent)
(reaction with protein A; auto-stimulating cells, their preparation by transferring fusion proteins having trans signaling or adhesion function, and their use in therapy and assays)

IT 26062-48-6, Polyhistidine
RL: BSU (Biological study, unclassified); PRP (Properties); BIOL (Biological study)
(tag in fusion protein; auto-stimulating cells, their preparation by transferring fusion proteins having trans signaling or adhesion function, and their use in therapy and assays)

L18 ANSWER 2 OF 11 HCAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 2003:698243 HCAPLUS
DOCUMENT NUMBER: 139:349391
TITLE: New design for cancer vaccine and artificial veto cells: An emerging palette of protein paints
AUTHOR(S): **Tykocinski, Mark L.**; **Chen, Aoshuang**; Huang, Jui-Han; Weber, Matthew C.; **Zheng, Guoxing**
CORPORATE SOURCE: Department of Pathology and Laboratory Medicine, University of Pennsylvania, Philadelphia, PA, USA
SOURCE: Immunologic Research (2003), 27(2-3), 565-574
CODEN: IMRSEB; ISSN: 0257-277X
PUBLISHER: Humana Press Inc.
DOCUMENT TYPE: Journal; General Review
LANGUAGE: English

AB A review. Antigen-presenting cells (APC) can be refaced with "protein paints" that change the appearance of their T cell-oriented trans signal arrays. Our group has developed three categories of protein paints suitable for this kind of APC engineering: artificial glycosylphosphatidylinositol (GPI) proteins, palmitated-protein A:Fcγl fusion protein conjugates, and trans signal converter proteins. Protein paints have been devised with either immune enhancement or suppression in mind. Costimulator · GPI and palmitated-protein A:costimulator · Fcγl conjugates can be used to augment the immune-activating potential of tumor cells. Alternatively, protein paints can be designed to transform APC into artificial veto cells, in essence creating Trojan horses capable of inhibiting pathogenic T cells. Trans signal converter proteins (TSCP) have been devised for this purpose. Our first paradigmatic inhibitory TSCP, CTLA-4 · Fas ligand, binds to APC, and in so doing, simultaneously blocks B7 costimulation (via CTLA-4) and sends inhibitory trans signals (via Fas ligand) to T cells with dramatic efficacy. **Protein transfer** offers a number of advantages over gene transfer in facilitating quant. and combinatorial protein expression and simplifying in vivo applications; the palette of protein paints with immunotherapeutic potential will undoubtedly continue to evolve.

CC 15-0 (Immunochemistry)
ST review **protein transfer** costimulation cancer vaccine veto cell
IT Antigen-presenting cell
Immunostimulation
Immunotherapy
Protein engineering
Signal transduction, biological
T cell (lymphocyte)
(**protein transfer** of immunostimulatory mols. for cancer vaccine and artificial veto cells to modify APC-to-T cell trans signals)
IT Proteins

RL: BSU (Biological study, unclassified); PAC (Pharmacological activity); THU (Therapeutic use); BIOL (Biological study); USES (Uses)
(**protein transfer** of immunostimulatory mols. for cancer vaccine and artificial veto cells to modify APC-to-T cell trans signals)

IT Lymphocyte
(suppressor cell, veto cell; **protein transfer** of immunostimulatory mols. for cancer vaccine and artificial veto cells to modify APC-to-T cell trans signals)

IT Vaccines
(tumor; **protein transfer** of immunostimulatory mols. for cancer vaccine and artificial veto cells to modify APC-to-T cell trans signals)

IT Antitumor agents
(vaccines; **protein transfer** of immunostimulatory mols. for cancer vaccine and artificial veto cells to modify APC-to-T cell trans signals)

REFERENCE COUNT: 78 THERE ARE 78 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L18 ANSWER 3 OF 11 HCAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 2003:363910 HCAPLUS
DOCUMENT NUMBER: 139:132140
TITLE: Quantitative interplay between activating and pro-apoptotic signals dictates T cell responses
AUTHOR(S): **Chen, Aoshuang; Zheng, Guoxing; Tykocinski, Mark L.**
CORPORATE SOURCE: Department of Pathology and Laboratory Medicine, University of Pennsylvania, Philadelphia, PA, 19104-4283, USA
SOURCE: Cellular Immunology (2003), 221(2), 128-137
CODEN: CLIMB8; ISSN: 0008-8749
PUBLISHER: Elsevier Science
DOCUMENT TYPE: Journal
LANGUAGE: English

AB Antigen-presenting cells (APC) can express surface ligands with both T cell activating and inhibitory capacities, prompting the question of how responding T cells integrate opposing trans signals concurrently delivered by APC. To address this question in a quant. fashion, the authors turned to **protein transfer** as a unique exptl. approach that is well-suited for addressing such questions from a quant. standpoint. Costimulatory (either B7-1•Fcγ1 or Fcγ1•4-1BBL) and pro-apoptotic (Fcγ1•FasL) Fc fusion proteins were quant. "painted" in varying ratios onto surrogate APC pre-coated with palmitated-protein A, the latter serving as a surface anchor. Evaluating the signaling potential of these various painted cells in a standard in vitro T cell proliferation assay, the authors demonstrated that at a given level of TCR triggering, the quant. balance between costimulator (B7-1 or 4-1BBL) and FasL dictates the magnitude of the proliferative T cell response. Furthermore, when the costimulator d. is kept constant, there is also a quant. balance between TCR-directed and FasL signals. Interesting species-specific naive vs. memory T cell subset differences emerged with regard to susceptibility to Fas-mediated apoptosis and costimulator:FasL opposition. Taken together, these data demonstrate for the first time a quant. interplay between activating and pro-apoptotic trans signals that dictates the magnitude of T cell responses.

CC 15-2 (Immunochemistry)
ST apoptosis costimulatory mol signal T cell activation
IT Antigens
RL: BSU (Biological study, unclassified); BIOL (Biological study)

(CD137L; T-cell response to interplay between costimulatory and pro-apoptotic signaling ligands)
IT TCR (T cell receptors)
RL: BSU (Biological study, unclassified); BIOL (Biological study)
(CD3 complex; T-cell response to interplay between costimulatory and pro-apoptotic signaling ligands for activation via)
IT Cell activation
Cell proliferation
(T cell; in response to interplay between costimulatory and pro-apoptotic signaling ligands)
IT Apoptosis
Signal transduction, biological
(T-cell response to interplay between costimulatory and pro-apoptotic signaling ligands)
IT CD80 (antigen)
Fas ligand
RL: BSU (Biological study, unclassified); BIOL (Biological study)
(T-cell response to interplay between costimulatory and pro-apoptotic signaling ligands)
IT Antigen-presenting cell
(T-cell response to interplay between costimulatory and pro-apoptotic signaling ligands on)
IT CD3 (antigen)
RL: BSU (Biological study, unclassified); BIOL (Biological study)
(TCR complex; T-cell response to interplay between costimulatory and pro-apoptotic signaling ligands for activation via)
IT T cell (lymphocyte)
(activation; in response to interplay between costimulatory and pro-apoptotic signaling ligands)
IT T cell (lymphocyte)
(memory; response to interplay between costimulatory and pro-apoptotic signaling ligands)
IT CD4-positive T cell
(naive; response to interplay between costimulatory and pro-apoptotic signaling ligands)
IT T cell (lymphocyte)
(proliferation; in response to interplay between costimulatory and pro-apoptotic signaling ligands)
REFERENCE COUNT: 35 THERE ARE 35 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L18 ANSWER 4 OF 11 HCAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 2001:880214 HCAPLUS
DOCUMENT NUMBER: 136:133488
TITLE: Induction of antitumor immunity via intratumoral tetra-costimulator **protein transfer**
AUTHOR(S): **Zheng, Guoxing**; **Chen, Aoshuang**; Sterner, Raymond E.; Zhang, Paul J.; Pan, Tao; Kiyatkin, Nadya; **Tykocinski, Mark L.**
CORPORATE SOURCE: Department of Pathology and Laboratory Medicine, University of Pennsylvania, Philadelphia, PA, 19104, USA
SOURCE: Cancer Research (2001), 61(22), 8127-8134
CODEN: CNREA8; ISSN: 0008-5472
PUBLISHER: American Association for Cancer Research
DOCUMENT TYPE: Journal
LANGUAGE: English
AB The authors' group recently described a novel two-step Fcγ1 fusion **protein transfer** method, which entails the docking of Fcγ1 fusion proteins onto cells precoated with chemical palmitated

protein A (pal-prot A). In the present study, the authors have adapted this **protein transfer** method, originally used in an ex vivo context, for in situ tumor cell engineering, and in so doing, the authors have evaluated its utility for the induction of antitumor immunity via combinatorial costimulator **protein transfer** on to tumor cell surfaces. The feasibility of "painting" cells with preformed conjugates of a murine B7-1 costimulator derivative, B7-1·Fcγ1, and pal-prot A in a single step was first established ex vivo. Next, B7-1·Fcγ1:pal-prot A transfer was accomplished in vivo by directly injecting the preformed conjugates into highly aggressive L5178Y-R lymphomas grown intradermally in syngeneic mice. The presence of cell surface-associated B7-1 epitopes on cells of the injected tumors was documented by flow cytometric anal. of cells recovered subsequently from the injected tumors. B7-1·Fcγ1, along with Fcγ1 fusion protein derivs. of three addnl. costimulators (Fcγ1·4-1BBL, CD48·Fcγ1, and Fcγ1·CD40L) geared toward a variety of immune effectors, were together preconjugated with pal-prot A and injected directly into tumor beds. Significantly, this "tetra-costimulator" combination, delivered intratumorally, induced complete tumor regression in .apprx.45% of treated mice, whereas control injections of pal-prot A alone had no therapeutic effect. Furthermore, there was evidence for systemic antitumor immunity in that tumor-specific CTLs were detected in spleens recovered from cured mice, and these mice were uniformly protected against tumor rechallenge at distant tumor sites. Hence, combinatorial costimulator transfer, coupled to intratumoral delivery, may have special advantages for the induction of antitumor immunity.

CC 15-8 (Immunochemistry)

ST antitumor immunity T cell costimulator fusion protein

IT Receptors
RL: BSU (Biological study, unclassified); BIOL (Biological study)
(4-1BB, fusion products, with Fcγ1; palmitoylated protein A-mediated transfer to tumor membranes and induction of anti-tumor response)

IT Proteins
RL: BSU (Biological study, unclassified); BIOL (Biological study)
(A, palmitoylated; transfer to tumor membranes of T-cell costimulatory mol. fusion proteins is facilitated by)

IT Glycoproteins
RL: BSU (Biological study, unclassified); BIOL (Biological study)
(CD40-L (antigen CD40 ligand), fusion products, with Fcγ1; palmitoylated protein A-mediated transfer to tumor membranes and induction of anti-tumor response)

IT Antigens
RL: BSU (Biological study, unclassified); BIOL (Biological study)
(CD48 fusion products, with Fcγ1; palmitoylated protein A-mediated transfer to tumor membranes and induction of anti-tumor response)

IT Lymphoma
(T-cell; costimulatory mol.-Fcγ1 fusion proteins, complexed with palmitoylated protein A, are adsorbed to tumor membranes and elicit anti-tumor response)

IT T cell (lymphocyte)
(cytotoxic; costimulatory mol.-Fcγ1 fusion proteins, complexed with palmitoylated protein A, are adsorbed to tumor membranes and elicit anti-tumor response by)

IT Antibodies and Immunoglobulins
RL: BSU (Biological study, unclassified); BIOL (Biological study)
(fragments, Fcγ1, fusion products with costimulatory mols.; palmitoylated protein A-mediated transfer to tumor membranes and

induction of anti-tumor response)
IT CD80 (antigen)
RL: BSU (Biological study, unclassified); BIOL (Biological study)
(fusion products, with Fcγ1; palmitoylated protein A-mediated transfer to tumor membranes and induction of anti-tumor response)
IT Fusion proteins (chimeric proteins)
RL: BSU (Biological study, unclassified); BIOL (Biological study)
(of T-cell costimulatory mols. with Fcγ1 are transferred to tumor cell membranes and elicit anti-tumor response)
IT Adsorption
(of costimulatory mol.-Fcγ1 fusion proteins complexed with palmitoylated protein A to tumor membranes)
REFERENCE COUNT: 40 THERE ARE 40 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L18 ANSWER 5 OF 11 HCAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 2001:507826 HCAPLUS
DOCUMENT NUMBER: 135:89545
TITLE: Methods for **protein transfer** using lipidated proteins and fusion proteins
INVENTOR(S): **Tykocinski, Mark L.; Chen, Aoshuang ; Zheng, Guoxing**
PATENT ASSIGNEE(S): TR Associates, L.L.C., USA
SOURCE: PCT Int. Appl., 43 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 2
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2001049825	A1	20010712	WO 2001-US103	20010103
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM				
RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG				
US 6316256	B1	20011113	US 2000-476828	20000103
EP 1246901	A1	20021009	EP 2001-900311	20010103
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR				
JP 2003519240	T2	20030617	JP 2001-550354	20010103
PRIORITY APPLN. INFO.:			US 2000-476828 A	20000103
			WO 2001-US103 W	20010103

AB Methods for transferring one or more proteins to a cell are disclosed. The protein or proteins to be transferred are in the form of a fusion protein, and contain at least one domain encoding for a protein or peptide having trans signaling and/or adhesion function. The fusion protein is transferred to a cell by binding to a lipidated protein, which has been incorporated into the cell membrane. Methods for using cells which have undergone **protein transfer** according to the present methods are also disclosed. This includes use in a cancer vaccine, use for treatment of cancer or autoimmune disease, and use in determining costimulator threshold levels. A B7-1-Fcγ1 fusion protein was transferred to K562 cells using palmitated protein A.

IC ICM C12N005-00
ICS C12N005-02; C12N005-06; C12N005-16
CC 9-16 (Biochemical Methods)
Section cross-reference(s): 1, 6, 15, 63
ST **protein transfer** chimeric trans signaling cell adhesion; lipidated **protein transfer** fusion protein; palmitated protein A transfer CD80 fusion Fc IgG1
IT Antigens
RL: BAC (Biological activity or effector, except adverse); BPR (Biological process); BSU (Biological study, unclassified); PRP (Properties); BIOL (Biological study); PROC (Process)
(4-1BB ligand, fusion protein containing; **protein transfer** methods using lipidated proteins and fusion proteins having trans signaling or adhesion function)
IT Proteins, specific or class
RL: BAC (Biological activity or effector, except adverse); BPR (Biological process); BSU (Biological study, unclassified); SPN (Synthetic preparation); BIOL (Biological study); PREP (Preparation); PROC (Process)
(A, lipidated; **protein transfer** methods using lipidated proteins and fusion proteins having trans signaling or adhesion function)
IT Lipids, biological studies
RL: BAC (Biological activity or effector, except adverse); BSU (Biological study, unclassified); PRP (Properties); BIOL (Biological study)
(C12-C22, protein lipidated with; **protein transfer** methods using lipidated proteins and fusion proteins having trans signaling or adhesion function)
IT Glycoproteins, specific or class
RL: BAC (Biological activity or effector, except adverse); BPR (Biological process); BSU (Biological study, unclassified); PRP (Properties); BIOL (Biological study); PROC (Process)
(CD40-L (antigen CD40 ligand), fusion protein containing; **protein transfer** methods using lipidated proteins and fusion proteins having trans signaling or adhesion function)
IT CD antigens
RL: BAC (Biological activity or effector, except adverse); BPR (Biological process); BSU (Biological study, unclassified); PRP (Properties); BIOL (Biological study); PROC (Process)
(CD48, fusion protein containing; **protein transfer** methods using lipidated proteins and fusion proteins having trans signaling or adhesion function)
IT Animal cell line
(CHO; **protein transfer** methods using lipidated proteins and fusion proteins having trans signaling or adhesion function)
IT Animal cell line
(Daudi, EL-4; **protein transfer** methods using lipidated proteins and fusion proteins having trans signaling or adhesion function)
IT Proteins, specific or class
RL: BAC (Biological activity or effector, except adverse); BPR (Biological process); BSU (Biological study, unclassified); BIOL (Biological study); PROC (Process)
(G, lipidated; **protein transfer** methods using lipidated proteins and fusion proteins having trans signaling or adhesion function)
IT Cell adhesion molecules
RL: BAC (Biological activity or effector, except adverse); BPR (Biological process); BSU (Biological study, unclassified); PRP (Properties); BIOL (Biological study); PROC (Process)

(ICAM-1 (intercellular adhesion mol. 1), fusion protein containing; **protein transfer** methods using lipidated proteins and fusion proteins having trans signaling or adhesion function)

IT Cell adhesion molecules
RL: BAC (Biological activity or effector, except adverse); BPR (Biological process); BSU (Biological study, unclassified); PRP (Properties); BIOL (Biological study); PROC (Process)
(ICAM-2 (intercellular adhesion mol. 2), fusion protein containing; **protein transfer** methods using lipidated proteins and fusion proteins having trans signaling or adhesion function)

IT Cell adhesion molecules
RL: BAC (Biological activity or effector, except adverse); BPR (Biological process); BSU (Biological study, unclassified); PRP (Properties); BIOL (Biological study); PROC (Process)
(ICAM-3 (intercellular adhesion mol. 3), fusion protein containing; **protein transfer** methods using lipidated proteins and fusion proteins having trans signaling or adhesion function)

IT Immunoglobulin receptors
RL: BAC (Biological activity or effector, except adverse); BPN (Biosynthetic preparation); BPR (Biological process); BSU (Biological study, unclassified); SPN (Synthetic preparation); BIOL (Biological study); PREP (Preparation); PROC (Process)
(IgG type I, fusion proteins with B7-1; **protein transfer** methods using lipidated proteins and fusion proteins having trans signaling or adhesion function)

IT Animal cell line
(JURKAT, Fas-pos., apoptosis of; **protein transfer** methods using lipidated proteins and fusion proteins having trans signaling or adhesion function)

IT Animal cell line
(JY; **protein transfer** methods using lipidated proteins and fusion proteins having trans signaling or adhesion function)

IT Animal cell line
(K562; **protein transfer** methods using lipidated proteins and fusion proteins having trans signaling or adhesion function)

IT Cell proliferation
(T cell; **protein transfer** methods using lipidated proteins and fusion proteins having trans signaling or adhesion function)

IT Immunity
(alloimmunity; **protein transfer** methods using lipidated proteins and fusion proteins having trans signaling or adhesion function)

IT Fas antigen
RL: BOC (Biological occurrence); BPR (Biological process); BSU (Biological study, unclassified); BIOL (Biological study); OCCU (Occurrence); PROC (Process)
(apoptosis of Jurkat cell pos. for; **protein transfer** methods using lipidated proteins and fusion proteins having trans signaling or adhesion function)

IT Transplant and Transplantation
(autotransplant; **protein transfer** methods using lipidated proteins and fusion proteins having trans signaling or adhesion function)

IT Proteins, specific or class
RL: BAC (Biological activity or effector, except adverse); BPR (Biological process); BSU (Biological study, unclassified); PRP (Properties); BIOL (Biological study); PROC (Process)

(coinhibitor, fusion protein containing; **protein transfer** methods using lipidated proteins and fusion proteins having trans signaling or adhesion function)

IT T cell (lymphocyte)
(costimulator activation thresholds determination in; **protein transfer** methods using lipidated proteins and fusion proteins having trans signaling or adhesion function)

IT Proteins, specific or class
RL: BAC (Biological activity or effector, except adverse); BPR (Biological process); BSU (Biological study, unclassified); PRP (Properties); BIOL (Biological study); PROC (Process)
(costimulator, fusion protein containing; **protein transfer** methods using lipidated proteins and fusion proteins having trans signaling or adhesion function)

IT Immunomodulators
(domain with function of; **protein transfer** methods using lipidated proteins and fusion proteins having trans signaling or adhesion function)

IT CD8 (antigen)
CD80 (antigen)
CD86 (antigen)
Fas ligand
LFA-3 (antigen)
RL: BAC (Biological activity or effector, except adverse); BPR (Biological process); BSU (Biological study, unclassified); PRP (Properties); BIOL (Biological study); PROC (Process)
(fusion protein containing; **protein transfer** methods using lipidated proteins and fusion proteins having trans signaling or adhesion function)

IT Antigens
RL: BAC (Biological activity or effector, except adverse); BPR (Biological process); BSU (Biological study, unclassified); PRP (Properties); BIOL (Biological study); PROC (Process)
(heat-stable, fusion protein containing; **protein transfer** methods using lipidated proteins and fusion proteins having trans signaling or adhesion function)

IT CD30 (antigen)
RL: BAC (Biological activity or effector, except adverse); BPR (Biological process); BSU (Biological study, unclassified); PRP (Properties); BIOL (Biological study); PROC (Process)
(ligand, fusion protein containing; **protein transfer** methods using lipidated proteins and fusion proteins having trans signaling or adhesion function)

IT Proteins, specific or class
RL: BAC (Biological activity or effector, except adverse); BPR (Biological process); BSU (Biological study, unclassified); BIOL (Biological study); PROC (Process)
(lipidated; **protein transfer** methods using lipidated proteins and fusion proteins having trans signaling or adhesion function)

IT Proteins, specific or class
RL: BAC (Biological activity or effector, except adverse); BPR (Biological process); BSU (Biological study, unclassified); PRP (Properties); BIOL (Biological study); PROC (Process)
(membrane, type I or II, fusion protein containing portion of; **protein transfer** methods using lipidated proteins and fusion proteins having trans signaling or adhesion function)

IT Affinity
(of fusion protein for lipidated protein; **protein transfer** methods using lipidated proteins and fusion proteins

having trans signaling or adhesion function)
IT T cell (lymphocyte)
(proliferation; **protein transfer** methods using lipidated proteins and fusion proteins having trans signaling or adhesion function)
IT Antitumor agents
Autoimmune disease
Cell
Cell adhesion
Cell membrane
Protein motifs
Signal transduction, biological
Temperature effects, biological
Therapy
(**protein transfer** methods using lipidated proteins and fusion proteins having trans signaling or adhesion function)
IT Fusion proteins (chimeric proteins)
Proteins, general, biological studies
RL: BAC (Biological activity or effector, except adverse); BPR (Biological process); BSU (Biological study, unclassified); BIOL (Biological study); PROC (Process)
(**protein transfer** methods using lipidated proteins and fusion proteins having trans signaling or adhesion function)
IT Cytokines
Interleukin 2
RL: BOC (Biological occurrence); BSU (Biological study, unclassified); BIOL (Biological study); OCCU (Occurrence)
(**protein transfer** methods using lipidated proteins and fusion proteins having trans signaling or adhesion function)
IT Proteins, specific or class
RL: BAC (Biological activity or effector, except adverse); BPR (Biological process); BSU (Biological study, unclassified); PRP (Properties); BIOL (Biological study); PROC (Process)
(signal-transducing; **protein transfer** methods using lipidated proteins and fusion proteins having trans signaling or adhesion function)
IT Antibodies
RL: BAC (Biological activity or effector, except adverse); BPR (Biological process); BSU (Biological study, unclassified); PRP (Properties); BIOL (Biological study); PROC (Process)
(single chain, Fv derivative, fusion protein containing; **protein transfer** methods using lipidated proteins and fusion proteins having trans signaling or adhesion function)
IT Vaccines
(tumor; **protein transfer** methods using lipidated proteins and fusion proteins having trans signaling or adhesion function)
IT Antitumor agents
(vaccines; **protein transfer** methods using lipidated proteins and fusion proteins having trans signaling or adhesion function)
IT Apoptosis
(with Fc-hFasL fusion protein anchored with palmitated protein A; **protein transfer** methods using lipidated proteins and fusion proteins having trans signaling or adhesion function)
IT Interferons
RL: BOC (Biological occurrence); BSU (Biological study, unclassified); BIOL (Biological study); OCCU (Occurrence)
(γ; **protein transfer** methods using lipidated proteins and fusion proteins having trans signaling or adhesion

function)
IT 57-10-3DP, Palmitic acid, conjugates with protein A
RL: BAC (Biological activity or effector, except adverse); BPR (Biological process); BSU (Biological study, unclassified); SPN (Synthetic preparation); BIOL (Biological study); PREP (Preparation); PROC (Process)
(**protein transfer** methods using lipidated proteins and fusion proteins having trans signaling or adhesion function)
IT 14464-31-4
RL: RCT (Reactant); RACT (Reactant or reagent)
(**protein transfer** methods using lipidated proteins and fusion proteins having trans signaling or adhesion function)
REFERENCE COUNT: 2 THERE ARE 2 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L18 ANSWER 6 OF 11 HCAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 2000:52445 HCAPLUS
DOCUMENT NUMBER: 132:206675
TITLE: Hierarchical costimulator thresholds for distinct immune responses: application of a novel two-step Fc fusion **protein transfer** method
AUTHOR(S): **Chen, Aoshuang; Zheng, Guoxing; Tykocinski, Mark L.**
CORPORATE SOURCE: Department of Pathology and Laboratory Medicine, University of Pennsylvania, Philadelphia, PA, 19104, USA
SOURCE: Journal of Immunology (2000), 164(2), 705-711
CODEN: JOIMA3; ISSN: 0022-1767
PUBLISHER: American Association of Immunologists
DOCUMENT TYPE: Journal
LANGUAGE: English
AB Activation of T cells is dependent upon coordinate engagement of Ag and costimulator receptors on their surfaces. In the case of the Ag receptors (TCRs), activation thresholds have been defined, with the number of TCRs that must be triggered to stimulate cytokine secretion by individual activated T cells differing for the various cytokines. In the present study, the authors have determined whether comparable activation thresholds exist for the costimulator receptors on T cells. To facilitate this type of quant. costimulator anal., the authors developed a novel two-step **protein transfer** approach that permits delivery of graded amts. of proteins to APC surfaces. By adding a human B7-1·Fcγ1 (Fc domain of human IgG1) fusion protein to cells precoated with palmitated protein A, fine titration of the B7-1 extracellular domain was achieved. The B7-1·Fcγ1 reincorporated into cell membranes by this method retained costimulator function, as measured by an in vitro proliferation assay. The degree of proliferation was dependent on the surface d. of B7-1·Fcγ1. Significantly, the threshold B7-1·Fcγ1 d. required for cytokine production differed between IFN-γ and IL-2 and mirrored the hierarchy (IFN-γ < IL-2) described previously for the TCR activation threshold. Hence, this study invokes a novel **protein transfer** strategy to establish that the levels of surface costimulator on APCs can dictate both the magnitude and the quality of evoked T cell responses. The notion of costimulator receptor activation thresholds emerges.
CC 15-2 (Immunochemistry)
ST B7 fusion protein cytokine T cell activation
IT Proteins, specific or class
RL: BUU (Biological use, unclassified); BIOL (Biological study); USES (Uses)
(A, palmitoylated; for incorporation of B7-1 fusion protein into antigen-presenting cells)

IT Immunoglobulins
RL: BAC (Biological activity or effector, except adverse); BSU (Biological study, unclassified); BIOL (Biological study)
(G1, Fc, fusion products, with B7-1; threshold dependence for induction of T-cell cytokine expression by)
IT CD80 (antigen)
RL: BAC (Biological activity or effector, except adverse); BSU (Biological study, unclassified); BIOL (Biological study)
(fusion products, with IgG1 Fc; threshold dependence for induction of T-cell cytokine expression by)
IT Antigen-presenting cell
Cell activation
Immunological accessory cell
T cell (lymphocyte)
(threshold dependence for B7 fusion protein costimulatory induction of cytokine expression by T-cells)
IT Fusion proteins (chimeric proteins)
RL: BAC (Biological activity or effector, except adverse); BSU (Biological study, unclassified); BIOL (Biological study)
(threshold dependence for B7 fusion protein costimulatory induction of cytokine expression by T-cells)
IT Interleukin 2
RL: BSU (Biological study, unclassified); MFM (Metabolic formation); BIOL (Biological study); FORM (Formation, nonpreparative)
(threshold dependence for B7 fusion protein costimulatory induction of cytokine expression by T-cells)
IT Interferons
RL: BSU (Biological study, unclassified); MFM (Metabolic formation); BIOL (Biological study); FORM (Formation, nonpreparative)
(γ; threshold dependence for B7 fusion protein costimulatory induction of cytokine expression by T-cells)
REFERENCE COUNT: 27 THERE ARE 27 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L18 ANSWER 7 OF 11 HCAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 1999:732755 HCAPLUS
DOCUMENT NUMBER: 132:235617
TITLE: **Protein transfer** of glycosyl-phosphatidylinositol (GPI)-modified murine B7-1 and B7-2 costimulators
AUTHOR(S): Brunschwig, Elaine B.; Fayen, John D.; Medof, M. Edward; **Tykocinski, Mark L.**
CORPORATE SOURCE: Institute of Pathology, Case Western Reserve University, Cleveland, OH, 44106, USA
SOURCE: Journal of Immunotherapy (1999), 22(5), 390-400
CODEN: JOIMF8; ISSN: 1053-8550
PUBLISHER: Lippincott Williams & Wilkins
DOCUMENT TYPE: Journal
LANGUAGE: English
AB The feasibility of using **protein transfer** as a means for enhancing the immunogenicity of murine tumor cells was evaluated. Glycosyl-phosphatidylinositol (GPI)-modified variants of the murine costimulators B7-1 (CD80) and B7-2 (CD86), designated B7-1•GPI and B7-2•GPI, resp., were immunoaffinity-purified from CHO-K1 cells transfected with glutamine synthetase amplification/expression constructs encoding each of these chimeric proteins. The proteins, once purified in detergent-depleted pseudomicelles, were exogenously incorporated into the membranes of several different murine tumor lines (EL-4, SMUCC-1, BW5147.3, P815, Ag104A, and EMT6). Successful membrane painting with the B7•GPI proteins was documented by immunofluorescence and flow

cytometry, and membrane integration was verified by demonstrating that the reincorporated proteins were phosphatidylinositol-phospholipase C-sensitive, glycosyl-phosphatidylinositol-phospholipase D-resistant, and refractory to removal with dimyristylphosphatidylcholine vesicles. Significantly, B7-1•GPI and B7-2•GPI could be together copainted onto EL-4 cell surfaces with no interference observed between the two. A standard in vitro proliferation assay was used to show that both of the B7•GPI proteins retained costimulator function after membrane reincorporation. These findings further validate the therapeutic potential of **protein-transferred** costimulator•GPIs and pave the way for their combinatorial use in animal tumor models.

CC 15-2 (Immunochemistry)
Section cross-reference(s): 3

ST glycosylphosphatidylinositol modified tumor cell **protein transfer**

IT CD80 (antigen)
CD86 (antigen)
RL: BAC (Biological activity or effector, except adverse); BPN (Biosynthetic preparation); BPR (Biological process); BSU (Biological study, unclassified); PUR (Purification or recovery); BIOL (Biological study); PREP (Preparation); PROC (Process)
(-GPI; **protein transfer** of glycosyl-phosphatidylinositol (GPI)-modified murine B7-1 and B7-2 costimulators)

IT Animal cell line
(Ag104A; **protein transfer** of glycosyl-phosphatidylinositol (GPI)-modified murine B7-1 and B7-2 costimulators and incorporation into)

IT Animal cell line
(Bw5147.3; **protein transfer** of glycosyl-phosphatidylinositol (GPI)-modified murine B7-1 and B7-2 costimulators and incorporation into)

IT Animal cell line
(EL4; **protein transfer** of glycosyl-phosphatidylinositol (GPI)-modified murine B7-1 and B7-2 costimulators and incorporation into)

IT Animal cell line
(EMT6; **protein transfer** of glycosyl-phosphatidylinositol (GPI)-modified murine B7-1 and B7-2 costimulators and incorporation into)

IT Animal cell line
(P-815; **protein transfer** of glycosyl-phosphatidylinositol (GPI)-modified murine B7-1 and B7-2 costimulators and incorporation into)

IT Animal cell line
(Smucc-1; **protein transfer** of glycosyl-phosphatidylinositol (GPI)-modified murine B7-1 and B7-2 costimulators and incorporation into)

IT Glycophospholipids
RL: BAC (Biological activity or effector, except adverse); BPN (Biosynthetic preparation); BPR (Biological process); BSU (Biological study, unclassified); BIOL (Biological study); PREP (Preparation); PROC (Process)
(phosphatidylinositol-containing; **protein transfer** of glycosyl-phosphatidylinositol (GPI)-modified murine B7-1 and B7-2 costimulators)

IT Cell proliferation
(**protein transfer** of glycosyl-phosphatidylinositol (GPI)-modified murine B7-1 and B7-2 costimulators)

IT Antigens
RL: BAC (Biological activity or effector, except adverse); BPN

(Biosynthetic preparation); BPR (Biological process); BSU (Biological study, unclassified); PUR (Purification or recovery); BIOL (Biological study); PREP (Preparation); PROC (Process)
(**protein transfer** of glycosyl-phosphatidylinositol (GPI)-modified murine B7-1 and B7-2 costimulators and enhancement as)

IT Cell membrane
(**protein transfer** of glycosyl-phosphatidylinositol (GPI)-modified murine B7-1 and B7-2 costimulators and incorporation into tumor)

IT Fusion proteins (chimeric proteins)
RL: BAC (Biological activity or effector, except adverse); BPN (Biosynthetic preparation); BPR (Biological process); BSU (Biological study, unclassified); PUR (Purification or recovery); BIOL (Biological study); PREP (Preparation); PROC (Process)
(**protein transfer** of glycosyl-phosphatidylinositol (GPI)-modified murine B7-1 and B7-2 costimulators as)

IT Transformation, genetic
(**protein transfer** of glycosyl-phosphatidylinositol (GPI)-modified murine B7-1 and B7-2 costimulators instead of)

IT Immunotherapy
(**protein transfer** of glycosyl-phosphatidylinositol (GPI)-modified murine B7-1 and B7-2 costimulators use in)

IT Genetic methods
Protein engineering
(**protein transfer** or protein painting; **protein transfer** of glycosyl-phosphatidylinositol (GPI)-modified murine B7-1 and B7-2 costimulators)

IT Vaccines
(tumor; **protein transfer** of glycosyl-phosphatidylinositol (GPI)-modified murine B7-1 and B7-2 costimulators as)

IT Antitumor agents
(vaccines; **protein transfer** of glycosyl-phosphatidylinositol (GPI)-modified murine B7-1 and B7-2 costimulators as)

REFERENCE COUNT: 69 THERE ARE 69 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L18 ANSWER 8 OF 11 HCAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 1999:16595 HCAPLUS
DOCUMENT NUMBER: 130:236039
TITLE: Engineering cellular cancer vaccines: gene and **protein transfer** options
AUTHOR(S): **Tykocinski, Mark L.**
CORPORATE SOURCE: Department of Pathology and Laboratory Medicine, University of Pennsylvania, Philadelphia, PA, 19104, USA
SOURCE: Gene Therapy of Cancer (1999), 301-318. Editor(s): Lattime, Edmund C.; Gerson, Stanton L. Academic: San Diego, Calif.
CODEN: 67DQAI
DOCUMENT TYPE: Conference; General Review
LANGUAGE: English

AB A review with 174 refs. discussing the two major classes of cellular cancer vaccines, dendritic and tumor cell vaccines, both of which are designed to activate tumor-specific CD8-pos. cytotoxic T-cell effectors. The focus here is on the cellular engineering tools that are currently available for the ex vivo production of both classes of cancer vaccines, especially those tools applicable to engineering cell surfaces. Most studies to date

have concentrated upon ex vivo gene transfer approaches, but openness to other cellular engineering strategies is needed.

CC 15-0 (Immunochemistry)

ST review genetic engineering cancer vaccine; **protein transfer** cancer vaccine review

IT Cell membrane
(cancer vaccine development using costimulatory mol. transfer to tumor cell membrane)

IT Neoplasm
(genetic engineering and **protein transfer** modification of tumor cells for vaccines against)

IT Cytokines
RL: BAC (Biological activity or effector, except adverse); BSU (Biological study, unclassified); BIOL (Biological study)
(genetic engineering of cytokine expression by tumor cells for cancer vaccines)

IT CD80 (antigen)
RL: BAC (Biological activity or effector, except adverse); BSU (Biological study, unclassified); BIOL (Biological study)
(genetic engineering of immune costimulatory mol. expression by tumor cells for cancer vaccines)

IT Dendritic cell
(in genetic engineering and **protein transfer** modification of tumor cells for cancer vaccines)

IT Genetic engineering
(of tumor cells for cancer vaccines)

IT CD86 (antigen)
RL: BAC (Biological activity or effector, except adverse); BSU (Biological study, unclassified); BIOL (Biological study)
(transfer to tumor cell membrane in relation to cancer vaccine development)

IT Antigens
RL: BAC (Biological activity or effector, except adverse); BSU (Biological study, unclassified); BIOL (Biological study)
(tumor-associated; in genetic engineering and **protein transfer** modification of tumor cells for cancer vaccines)

IT Vaccines
(tumor; genetic engineering and **protein transfer** modification of tumor cells for)

IT Antitumor agents
(vaccines; genetic engineering and **protein transfer** modification of tumor cells for)

REFERENCE COUNT: 174 THERE ARE 174 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L18 ANSWER 9 OF 11 HCAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 1996:357220 HCAPLUS
DOCUMENT NUMBER: 125:31912
TITLE: Methods for engineering antigen-presenting cells
INVENTOR(S): **Tykocinski, Mark L.**
PATENT ASSIGNEE(S): USA
SOURCE: PCT Int. Appl., 64 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE

WO 9612009	A2	19960425	WO 1995-US12718	19951011
WO 9612009	A3	19961010		

W: CA, JP
RW: AT, BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE
PRIORITY APPLN. INFO.: US 1994-324125 19941014

AB A **protein transfer** method for producing a cell having a defined MHC: nominal antigen peptide or costimulator on its membrane. The method comprises (1) first contacting the external portion of the cells with an externally applied artificial lipid-modified MHC polypeptide able to bind a nominal antigen peptide, and (2) second contacting the cells with the nominal antigen peptide so that the artificial lipid-modified MHC polypeptide binds the antigen peptide. Demonstrated in examples were production of glycosylphosphatidylinositol-modified human class I MHC, purification of HLA-A2.1:GPI/β2m heterodimers, cytolytic T lymphocyte recognition of C1R cells coated with HLA-A2.1:GPI/β2m heterodimer and HLA-A2.1-restricted peptide complexes, preparation of veto cell by **protein transfer** of an HLA-A2.1:GPT/β2m peptide complex, treatment of chronic active hepatitis patient with hepatitis B virus-specific T cells amplified using HLA-A2.1:GPI:hepatitis B virus peptide-coated dendritic cells, and a functional artificial GPI-modified costimulator (B7-1:GPI).

IC ICM C12N005-08
CC 15-1 (Immunochemistry)
ST antigen presenting cell glycosylphosphatidylinositol modified MHC
IT Antigens
RL: MOA (Modifier or additive use); THU (Therapeutic use); BIOL (Biological study); USES (Uses)
(B7-3, costimulator peptide; engineering of antigen-presenting cells by contacting with lipid-modified MHC polypeptide and nominal antigen peptide)
IT Animal cell line
(C1R; engineering of antigen-presenting cells by contacting with lipid-modified MHC polypeptide and nominal antigen peptide)
IT Fibronectins
RL: MOA (Modifier or additive use); THU (Therapeutic use); BIOL (Biological study); USES (Uses)
(costimulator peptide; engineering of antigen-presenting cells by contacting with lipid-modified MHC polypeptide and nominal antigen peptide)
IT Immunological accessory cell
Membrane, biological
(engineering of antigen-presenting cells by contacting with lipid-modified MHC polypeptide and nominal antigen peptide)
IT Peptides, biological studies
RL: BSU (Biological study, unclassified); MOA (Modifier or additive use); THU (Therapeutic use); BIOL (Biological study); USES (Uses)
(engineering of antigen-presenting cells by contacting with lipid-modified MHC polypeptide and nominal antigen peptide)
IT Lipids, uses
RL: MOA (Modifier or additive use); USES (Uses)
(engineering of antigen-presenting cells by contacting with lipid-modified MHC polypeptide and nominal antigen peptide)
IT Animal cell
(lipid-modified MHC:nominal antigen peptide-containing; engineering of antigen-presenting cells by contacting with lipid-modified MHC polypeptide and nominal antigen peptide)
IT Gene
RL: BSU (Biological study, unclassified); BIOL (Biological study)
(transfer; engineering of antigen-presenting cells by contacting with

lipid-modified MHC polypeptide and nominal antigen peptide)

IT Antigens
RL: MOA (Modifier or additive use); THU (Therapeutic use); BIOL (Biological study); USES (Uses)
(B 7.2, costimulator peptide; engineering of antigen-presenting cells by contacting with lipid-modified MHC polypeptide and nominal antigen peptide)

IT Lymphocyte
(B-cell, activated; engineering of antigen-presenting cells by contacting with lipid-modified MHC polypeptide and nominal antigen peptide)

IT Antigens
RL: MOA (Modifier or additive use); THU (Therapeutic use); BIOL (Biological study); USES (Uses)
(B7/BB-1, costimulator peptide; engineering of antigen-presenting cells by contacting with lipid-modified MHC polypeptide and nominal antigen peptide)

IT Antigens
RL: MOA (Modifier or additive use); THU (Therapeutic use); BIOL (Biological study); USES (Uses)
(CD58, costimulator peptide; engineering of antigen-presenting cells by contacting with lipid-modified MHC polypeptide and nominal antigen peptide)

IT Histocompatibility antigens
RL: BSU (Biological study, unclassified); MOA (Modifier or additive use); THU (Therapeutic use); BIOL (Biological study); USES (Uses)
(HLA-A2.1, engineering of antigen-presenting cells by contacting with lipid-modified MHC polypeptide and nominal antigen peptide)

IT Glycoproteins, specific or class
RL: MOA (Modifier or additive use); THU (Therapeutic use); BIOL (Biological study); USES (Uses)
(ICAM-1 (intercellular adhesion mol. 1), costimulator peptide; engineering of antigen-presenting cells by contacting with lipid-modified MHC polypeptide and nominal antigen peptide)

IT Glycoproteins, specific or class
RL: MOA (Modifier or additive use); THU (Therapeutic use); BIOL (Biological study); USES (Uses)
(ICAM-2 (intercellular adhesion mol. 2), costimulator peptide; engineering of antigen-presenting cells by contacting with lipid-modified MHC polypeptide and nominal antigen peptide)

IT Histocompatibility antigens
RL: BSU (Biological study, unclassified); MOA (Modifier or additive use); THU (Therapeutic use); BIOL (Biological study); USES (Uses)
(MHC (major histocompatibility antigen complex), class I, engineering of antigen-presenting cells by contacting with lipid-modified MHC polypeptide and nominal antigen peptide)

IT Histocompatibility antigens
RL: BSU (Biological study, unclassified); MOA (Modifier or additive use); THU (Therapeutic use); BIOL (Biological study); USES (Uses)
(MHC (major histocompatibility antigen complex), class II, engineering of antigen-presenting cells by contacting with lipid-modified MHC polypeptide and nominal antigen peptide)

IT Histocompatibility antigens
RL: BSU (Biological study, unclassified); MOA (Modifier or additive use); THU (Therapeutic use); BIOL (Biological study); USES (Uses)
(MHC (major histocompatibility complex), engineering of antigen-presenting cells by contacting with lipid-modified MHC polypeptide and nominal antigen peptide)

IT Lymphocyte
(T-cell, antigen-specific; engineering of antigen-presenting cells by

contacting with lipid-modified MHC polypeptide and nominal antigen peptide)

IT Sialoglycoproteins
RL: MOA (Modifier or additive use); THU (Therapeutic use); BIOL (Biological study); USES (Uses)
(VCAM-1 (vascular cell adhesion mol. 1), costimulator peptide; engineering of antigen-presenting cells by contacting with lipid-modified MHC polypeptide and nominal antigen peptide)

IT Gene, animal
RL: BSU (Biological study, unclassified); BIOL (Biological study)
(chimeric, engineering of antigen-presenting cells by contacting with lipid-modified MHC polypeptide and nominal antigen peptide)

IT Leukocyte
(dendritic cell, engineering of antigen-presenting cells by contacting with lipid-modified MHC polypeptide and nominal antigen peptide)

IT Virus, animal
(hepatitis B, peptide; engineering of antigen-presenting cells by contacting with lipid-modified MHC polypeptide and nominal antigen peptide)

IT Glycophospholipids
RL: MOA (Modifier or additive use); USES (Uses)
(phosphatidylinositol-containing, engineering of antigen-presenting cells by contacting with lipid-modified MHC polypeptide and nominal antigen peptide)

IT Antigens
RL: BSU (Biological study, unclassified); MOA (Modifier or additive use); THU (Therapeutic use); BIOL (Biological study); USES (Uses)
(tumor-associated, engineering of antigen-presenting cells by contacting with lipid-modified MHC polypeptide and nominal antigen peptide)

IT 26062-48-6, Polyhistidine
RL: MOA (Modifier or additive use); USES (Uses)
(as tag; engineering of antigen-presenting cells by contacting with lipid-modified MHC polypeptide and nominal antigen peptide)

IT 9013-20-1, Streptavidin
RL: MOA (Modifier or additive use); USES (Uses)
(engineering of antigen-presenting cells by contacting with lipid-modified MHC polypeptide and nominal antigen peptide)

L18 ANSWER 10 OF 11 HCAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 1995:983881 HCAPLUS
DOCUMENT NUMBER: 124:27559
TITLE: Glycosylphosphatidylinositol-modified murine B7-1 and B7-2 retain costimulator function
AUTHOR(S): Brunschwig, Elaine B.; Levine, Elie; Trefzer, Uwe; **Tykocinski, Mark L.**
CORPORATE SOURCE: Inst. Pathol., Case Western Res. Univ., Cleveland, OH, 44106, USA
SOURCE: Journal of Immunology (1995), 155(12), 5498-505
CODEN: JOIMA3; ISSN: 0022-1767
PUBLISHER: American Association of Immunologists
DOCUMENT TYPE: Journal
LANGUAGE: English

AB Glycosylphosphatidylinositol (GPI)-modified variants of murine B7-1 and B7-2 cell surface costimulators were produced via chimerization with alternative GPI-modification signal sequences from decay-accelerating factor (DAF). GPI anchorage was verified by demonstrating phosphatidylinositol-specific phospholipase C (PI-PLC) sensitivity of the chimeric polypeptides in both immunofluorescence/flow-cytometric and immunopptn. analyses. The various GPI-modified chimeric B7-1:DAF and B7-2:DAF polypeptides were shown to retain costimulator function, in both

an in vitro proliferation assay and an in vivo triggering of cytotoxicity assay. The findings indicate that costimulator function for both B7-1 and B7-2 is not dependent upon native hydrophobic transmembrane anchorage. Moreover, the functionality of the GPI-modified variants in enhancing the immunogenicity of the murine T lymphoma line EL-4 suggests a novel route for generating APC-centered immunotherapeutics, including cellular cancer vaccines, that is based upon **protein transfer** of GPI-modified costimulators.

CC 15-2 (Immunochemistry)

ST Glycosylphosphatidylinositol modified murine antigen B7

IT Antigens
RL: BPR (Biological process); BSU (Biological study, unclassified); PRP (Properties); BIOL (Biological study); PROC (Process)
(B 7.2, glycosylphosphatidylinositol-modified murine B7-1 and B7-2 retain costimulator function)

IT Antigens
RL: BPR (Biological process); BSU (Biological study, unclassified); PRP (Properties); BIOL (Biological study); PROC (Process)
(B7/BB-1, glycosylphosphatidylinositol-modified murine B7-1 and B7-2 retain costimulator function)

IT Glycophospholipids
RL: MOA (Modifier or additive use); USES (Uses)
(phosphatidylinositol-containing, decay-accelerating factor-derived; glycosylphosphatidylinositol-modified murine B7-1 and B7-2 retain costimulator function)

L18 ANSWER 11 OF 11 HCAPLUS COPYRIGHT 2004 ACS on STN

ACCESSION NUMBER: 1994:698694 HCAPLUS

DOCUMENT NUMBER: 121:298694

TITLE: **Protein transfer** of preformed MHC-peptide complexes sensitizes target cells to T cell cytolysis

AUTHOR(S): Huang, Jui-Han; Getty, Robert R.; Chisari, Francis V.; Fowler, Patricia; Greenspan, Neil S.; **Tykocinski, Mark L.**

CORPORATE SOURCE: Inst. Pathol., Case Western Res. Univ., Cleveland, OH, 44106, USA

SOURCE: Immunity (1994), 1(7), 607-13
CODEN: IUNIEH; ISSN: 1074-7613

PUBLISHER: Cell Press

DOCUMENT TYPE: Journal

LANGUAGE: English

AB Recombinant GPI-anchored HLA-A2.1 (HLA-A2.1-GPI/β2m) was used as a **protein transfer** vehicle to deliver a hepatitis B virus antigenic peptide to the surfaces of cytotoxic T cell targets. Empty HLA-A2.1-GPI/β2m was first produced in D. melanogaster contransfectants and immunoaffinity purified. Cell coating with HLA-A2.1-GPI/β2m effectively presented a hepatitis B virus peptide to peptide-specific HLA-A2.1-restricted T cell clones in cytotoxicity assays. **Protein transfer** of functional GPI-modified class I MHC-antigenic peptide complexes represents a novel strategy for delivering functional antigenic complexes to cell surfaces that bypasses limitations of gene transfer and permits control of antigenic peptide densities at cell surfaces.

CC 15-2 (Immunochemistry)

ST **protein transfer** MHC peptide complex; cytolysis T cell antigen complex transfer

IT Drosophila melanogaster
Transformation, genetic
(in recombinant glycosylphosphatidylinositol-anchored protein complexes

preparation in Drosophila melanogaster)

IT Cytolysis
(recombinant glycosylphosphatidylinositol-anchored **protein transfer** of preformed MHC-peptide complexes sensitizes target cells to T cell cytolysis)

IT Histocompatibility antigens
RL: BAC (Biological activity or effector, except adverse); BSU (Biological study, unclassified); BIOL (Biological study)
(HLA-A2.1, complexes; recombinant glycosylphosphatidylinositol-anchored **protein transfer** of preformed MHC-peptide complexes sensitizes target cells to T cell cytolysis)

IT Lymphocyte
(T-cell, cytotoxic, recombinant glycosylphosphatidylinositol-anchored **protein transfer** of preformed MHC-peptide complexes sensitizes target cells to T cell cytolysis)

IT Glycophospholipids
RL: BAC (Biological activity or effector, except adverse); BSU (Biological study, unclassified); BIOL (Biological study)
(phosphatidylinositol-containing, HLA-A2.1 complexes; recombinant glycosylphosphatidylinositol-anchored **protein transfer** of preformed MHC-peptide complexes sensitizes target cells to T cell cytolysis)